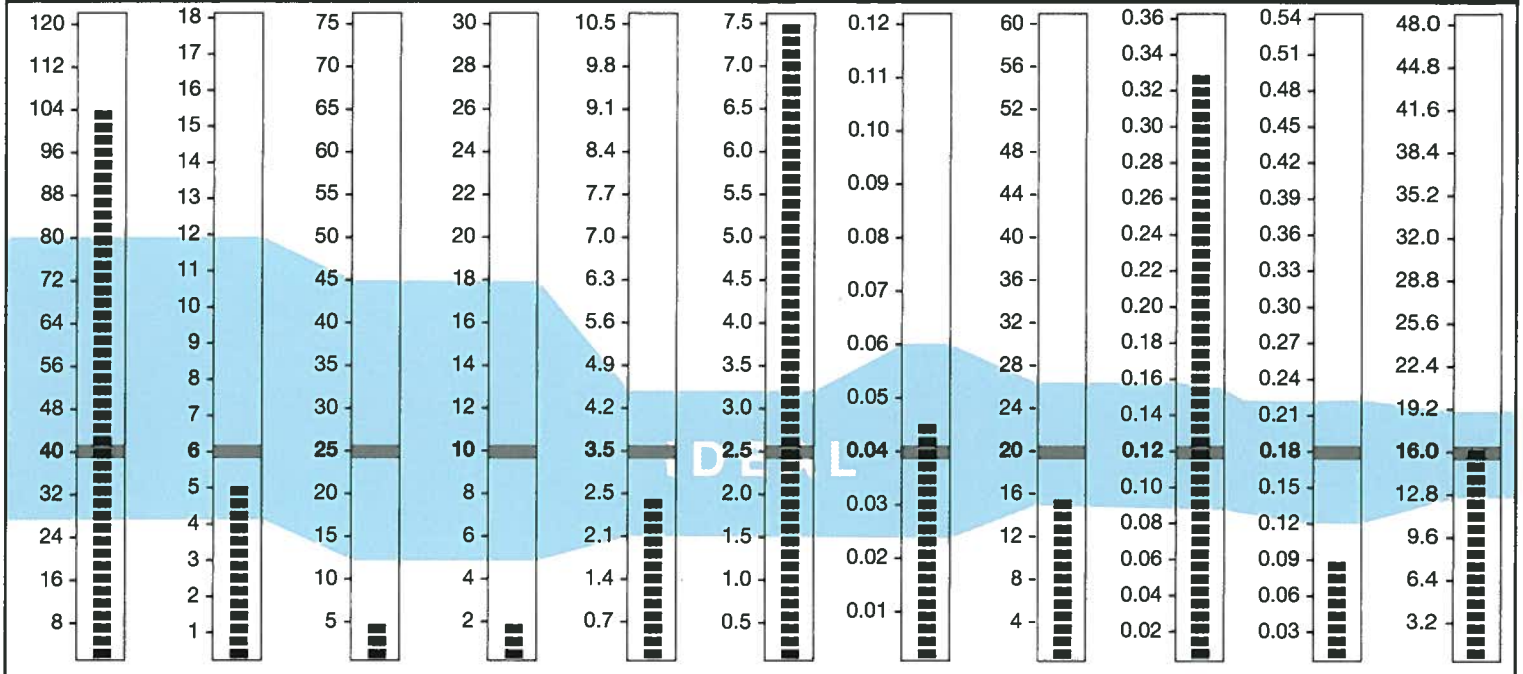
ANALYTICAL RESEARCH LABS, INC.
2225 W. Alice Ave. • Phoenix, AZ 85021 USA • (602) 995-1580

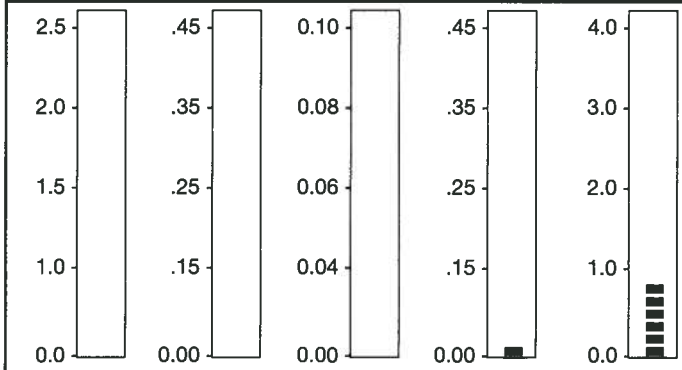
PATIENT NAME:					
Fernand					
SEX: M	AGE: 47	DATE: 8/22/13	LAB NO.	CLIENT ACCT. NO.	

NUTRIENT MINERALS



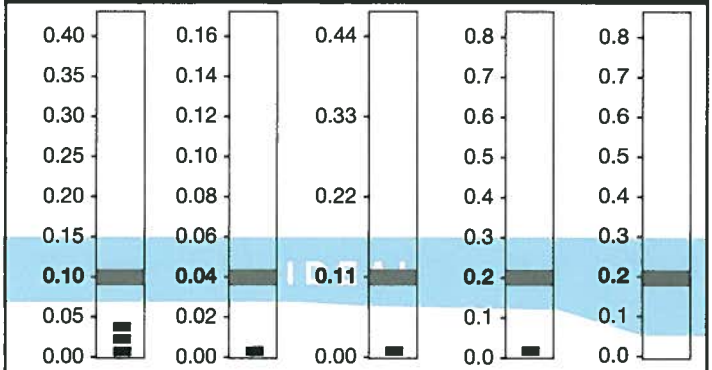
	CALCIUM (Ca)	MAGNESIUM (Mg)	SODIUM (Na)	POTASSIUM (K)	IRON (Fe)	COPPER (Cu)	MANGANESE (Mn)	ZINC (Zn)	CHROMIUM (Cr)	SELENIUM (Se)	PHOSPHORUS (P)
	103.0	5.0	5.0	2.0	2.6	7.7	0.045	15.0	0.330	0.080	16.0
PREVIOUS TEST	142.0	8.0	14.0	2.0	1.7	15.2	0.039	15.0	0.067	0.080	15.0

TOXIC METALS



	LEAD (Pb)	MERCURY (Hg)	CADMIUM (Cd)	ARSENIC (As)	ALUMINUM (Al)
	0.019	0.032	0.002	0.016	0.90
PREVIOUS TEST	0.029	0.043	0.001	0.009	1.52

ADDITIONAL MINERALS



	NICKEL (Ni)	COBALT (Co)	MOLYBDENUM (Mo)	LITHIUM (Li)	BORON (B)
	0.041	0.004	0.006	0.001	N/A
PREVIOUS TEST	0.032	0.006	0.003	0.010	N/A

SIGNIFICANT MINERAL RATIOS

MINERAL RATIO	IDEAL RATIO	CURRENT RATIO	% OF IDEAL	PREVIOUS RATIO	LOW / IDEAL / HIGH
CA/MG	6.67	20.60	309	17.75	HIGH
CA/K	4.00	51.50	1288	71.00	HIGH
NA/MG	4.17	1.00	24	1.75	LOW
NA/K	2.50	2.50	100	7.00	IDEAL
ZN/CU	8.00	1.95	24	0.99	LOW
CA/P	2.50	6.44	258	9.47	HIGH

MIXED OXIDIZER [ ] FAST OXIDIZER [ ] SLOW OXIDIZER [***]

N/A -- NOT AVAILABLE REPORTED IN Mg/% Testing by ACCUTRACE LABORATORIES, INC. • CLIA# 03D0641886 • Phoenix, AZ USA 85021 ARL-10 3/07

WHAT YOUR RETESTS REPRESENTS

The process of correcting body chemistry through hair mineral analysis is somewhat like peeling off old layers of wallpaper so that the walls can be repaired. In this analogy, your previous hair mineral analysis corresponds to the top layer of wallpaper showing at the time of the test. Your current retest, after following a nutritional rebalancing program for several months, represents a 'peel away' of the top layer and the exposure of another layer of mineral patterns beneath. Your previous nutrition program was designed to remove the top layer of mineral patterns, and the purpose of the retest is to reveal and correct the under lying mineral patterns that are now coming into view.

REASONS WHY INTERPRETATION OF RETESTS IS COMPLEX

Many types of changes in your chemistry may have occurred since your initial hair mineral analysis. These changes may include:

Retention of a Mineral. The body may retain a mineral in an organ or tissue for varying reasons, such as an increased requirement of that mineral in the rebuilding of tissues or organs. When this occurs, the level of that mineral will decline on the retest.

Excretion of a Mineral. The body may release or eliminate a mineral from the body. The mineral is eliminated first into the blood, from which it goes to the liver, kidneys and hair to be excreted.

Mobilization of a Mineral. A mineral may move out of tissue storage, into other areas of the body where it is needed. It is in this way that a mineral is thus made 'bio-available', or available for use.

Mineral Compensation. As minerals are retained, incorporated, excreted and mobilized, other minerals will balance and compensate for these changes in order to maintain critical mineral levels and ratios.

Mineral Replacement. A mineral which is occupying a binding site becomes replaced by a more desirable mineral for that site.

Test mineral values generally go *up*, or increase, during *excretion* and *mobilization*. Test mineral values generally go *down*, or diminish, during *retention* and after *excretion*. Test mineral values may go *up* or *down* during *replacement* or *compensation*.

The reason for the complexity of the interpretation of the retest is that all these phenomena are occurring simultaneously in your body.

WHY HAIR ANALYSIS CHANGES MAY NOT CORRELATE WITH THE WAY ONE FEELS

At times, a retest hair mineral analysis may show little change, yet one may feel significantly better, or perhaps worse. On other occasions, the test shows dramatic improvement, yet one feels the same.

To understand this phenomenon, it is important to realize that a hair analysis represents: 1) deep metabolic patterns, 2) the body's response to stress and 3) an average of several months of accumulation of minerals in the hair tissue.

SYMPTOMS IMPROVE, YET THE RETEST CHANGES VERY LITTLE

The main reason one occasionally sees little change on a hair test when symptoms improve is that symptomatic improvement may occur first, while deeper metabolic changes take longer to occur. Since the hair tissue mineral analysis reveals the deeper patterns, one must wait, perhaps six months or more for the deeper changes to be revealed

on a tissue mineral analysis. In other words, a lag occurs between the symptomatic change and the deep correction of body chemistry.

Another possibility is that a particular nutrient or a change in the diet has corrected a deficiency, allergic condition or other type of imbalance that results in a noticeable improvement in one's symptoms. However, this does not necessarily mean that deep correction of body chemistry has occurred. In this case, while one feels better, underlying biochemical patterns may not have changed significantly. This occurs often with drug therapy and with other symptomatic approaches to health care. It can also occur with nutrient therapy.

A hair tissue mineral analysis provides an insight to the way the body is responding to stress. The test is a metabolic blueprint of a homeostatic state or stress response. It is possible to have symptomatic change, yet the basic way in which the body responds to stress may remain the same.

Symptoms Remain The Same, Yet The Retest Shows Improvement

Occasionally a retest mineral analysis reveals significant or even dramatic improvement, yet one feels the same. One reason this occurs is that at times deep metabolic change precedes symptomatic improvement. The hair tissue mineral analysis is acting like an early indicator of correction. Improvement of symptoms will follow.

A related reason is that with a nutritional balancing program, the body often corrects the most important imbalances first. The most important imbalance may not be related to one's main symptomatic concerns, however. Therefore, one may not feel better immediately even though positive change is occurring. Some understanding of the correction process is required in order to continue with the program in spite of little apparent symptom change.

For example, often the first imbalance to be corrected is a latent and perhaps serious health condition. These conditions usually have no obvious symptoms and one is unaware of the developing pathology.

Since there are no obvious symptoms of pathology, one is also often not aware of the correction of the latent pathology either. Therefore, one might think that nothing has occurred after a few months on a program, when in fact an important healing process has occurred. The hair tissue mineral analysis may be the only indicator of the healing.

For instance, a tissue mineral retest may reveal the elimination of excess cadmium or mercury. This is an excellent event as either of these can contribute to severe illness. Yet at times one may not feel the benefit as the changes in body chemistry may be subtle, especially at first.

Meanwhile, one's more 'pressing' symptoms may not change. In reality, these may be much less important, however, than the elimination of a toxic metal and will be dealt with later.

Symptoms Improve, Yet The Retest Looks Worse

This occurs often on a hair tissue mineral analysis. The main reason is that imbalances in body chemistry are unwound or uncovered layer by layer. Often, a superficial layer does not appear that abnormal. However, a deeper layer reveals hidden toxic metals and other imbalances that are more aberrant.

This is not a cause for alarm during the process of uncovering and correcting deeper imbalances. Usually one feels better as these are uncovered as it means one must no longer spend energy compensating and adapting to underlying imbalances. Adaptive energy that was tied up in this way is now freed and one often feels better.

In those following a nutritional balancing program, blood, urine and other tests may also be skewed temporarily as the unwinding of layers of adaptations proceed. One simply addresses the imbalances that are present without placing too much emphasis on the seemingly worsened appearance of the mineral or other test.

Symptoms Are Worse, Yet The Retest Shows Improvement

The most common reason a retest reveals improvement when one feels worse is due to a healing reaction or

retracing reaction. This may be a temporary flare-up of an old infection or due to the removal of a toxic substance. A healing reaction may also be a decompensation in which metabolism slows or the healing of some other previous condition that causes a temporary aggravation of symptoms.

Many people are very out of touch with the messages the body is sending. Many are not in touch with the severity of their biochemical imbalances. Either they are used to the way they feel or they are used to ignoring or minimizing their symptoms. As body chemistry begins to improve often one becomes more in touch with one's condition and this may be perceived as feeling worse. For example, giving up coffee, soda pop or sugar can cause one's true fatigue condition to become apparent. One may feel worse for a while although in fact their health is improving.

Emotional Changes

Mental and emotional changes that accompany an improvement in body chemistry can also cause annoying symptoms at times. These may include increased awareness and increased emotional sensitivity. This can lead to temporary symptoms of anxiety or fear as one sees aspects of one's life more clearly.

Also, changes in the oxidation rate may be healthier, but not necessarily more comfortable. For example, many slow oxidizers feel anxious when their metabolism speeds up to normal. Fast oxidizers may feel tired or "too relaxed" when their oxidation rate slows down to normal.

Important Changes In Your Biochemical Profile

Oxidation Rate

Your oxidation rate has slowed down. This may occur temporarily as copper, cadmium, mercury or other toxic metals are eliminated from the body. The above toxic metals in excess have kept the oxidation rate up 'artificially', and the present chart is thus a more accurate picture of your metabolic efficiency. Often, other imbalances (levels and ratios) improve even when the oxidation rate slows down. The elimination of toxic metals may result in increased fatigue.

As a slow oxidizer, the most important principles of diet are:

- Eat a protein food at every meal. Choose low fat, low purine proteins such as white fish, fowl, bean and grain combinations, eggs and lean meat.
- Low dietary intake of fat.
- Moderate amounts of unrefined carbohydrates such as whole grains and whole grain products, legumes (beans, peas, lentils), root vegetables (potatoes, yams, etc.) squash.

Avoid fatty meats and foods high in fat content, organ meats (high purine content), and dairy products (high calcium content).

The above recommendations are principles only. If you have not already done so and desire to obtain a more personalized diet, we recommend that you request our personal diet plan, (profile 5).

Evaluation of Calcium Level (Decreased)

Your calcium level has decreased from previous elevated level or ratio-wise indicating a reduction in metastatic calcium (tissue calcification). Calcification of 'soft' tissue is frequently associated with conditions such as osteo-arthritis, rheumatism, bursitis, tendinitis, etc.

EVALUATION OF CALCIUM LEVEL (DECREASED)

Your calcium level has decreased from previous elevated level or ratio-wise to another mineral indicating an increase in bio-availability of calcium frequently associated with the reduced ability to withdraw calcium from body storage areas. The lowering of tissue calcium levels frequently results in a diminishment of anxiety states.

EVALUATION OF CALCIUM LEVEL (DECREASED)

Mental depression is a frequent manifestation of elevated calcium levels (over 40). Any reduction in an elevated calcium level or ratio-wise is frequently associated with a reduction of depression states.

DEPRESSION DIMINISHED

Tissue calcium/potassium ratio has improved from previous test indicating a reduction in mental depression. Mental depression is a frequent manifestation of elevated calcium levels.

METASTATIC TISSUE CALCIUM REDUCED

Tissue calcium/potassium ratio has improved from previous test indicating a reduction in metastatic calcium (tissue calcium). Calcification of 'soft tissue' is frequently associated with conditions such as osteo-arthritis, rheumatism, bursitis, tendinitis, etc.

THYROID ACTIVITY (INCREASED)

An elevated calcium level, particularly in ratio to potassium is indicative of a reduced thyroid function. A reduction in the calcium/potassium ratio indicates a trend toward improvement in thyroid function.

EVALUATION OF COPPER LEVEL (DECREASED)

Tissue copper level has decreased from your previous report, indicating that the copper is being actively eliminated from the tissues.

EVALUATION OF COPPER LEVEL (DECREASED)

Elevated copper is associated with a trend for hypertension. Your copper level has diminished, indicating reduction in the trend for hypertension.

EVALUATION OF COPPER LEVEL (DECREASED)

Excess copper is stored in the liver, where it may adversely affect liver function. Your copper level has diminished, indicating probable improvement in liver function.

ZINC TO COPPER RATIO

Your zinc to copper ratio has improved. Zinc in excess to copper tends to slow thyroid activity, while copper in excess to zinc tends to increase thyroid activity. Improvement in the zinc/copper ratio frequently reflects improved thyroid function.

EVALUATION OF IRON LEVEL (INCREASED)

Your previously low iron level has improved. This frequently indicates improved storage and availability of iron, improved tissue oxidation and reduction in the trend for anemia.

Evaluation of Iron Level (Increased)

Tissue iron level has improved indicating an improvement in the trend toward mental depression.

Evaluation of Manganese Level (Increased)

Manganese level has increased over previous level, representing increased elimination of manganese from tissue storage.

Evaluation of Aluminum Level (Decreased)

Tissue aluminum level has decreased from previous report resulting in a trend toward improved enzyme function.

Why a Retest May Look Worse Than the Original Test

Sometimes, when a person begins a nutritional correction program as derived from hair analysis data, their mineral levels may appear quite balanced, when actually such is not the case. This occurs because the individual has unknowingly developed various coping mechanisms and compensating mechanisms that 'cover up' or 'mask' nutrient deficiencies and imbalances. These coping mechanisms may include the accumulation of toxic metals, use of various stimulants such as coffee, alcohol and strenuous exercise, food habits, sleep habits, emotions and other subtle mechanisms. On the retest analysis, some of the toxic metal levels and glandular functions have changed as a result of the nutrient and diet program, and thus previous underlying mineral imbalances are exposed. Stated simply, the original test was not a true picture of balance, but instead was a picture of a precarious balance maintained by compensating mechanisms.

Why You May Feel Better Though the Retest Looks Worse

When underlying nutrient imbalances are brought to light on a retest, some mineral levels and ratios, as viewed by an untrained observer, frequently look worse. However, you may feel better because other imbalances that were present have improved or have been corrected. Also, although your oxidation rate may appear to worsen temporarily, energy path-ways may have been improved as a result of the program, and account for your improvement in general well-being.

Why You May Feel Worse or the Same When the Retest Indicates Improvement

You may feel worse if, as a result of undoing certain mineral imbalances, your body begins to use its newly developed internal energy to re-establish more favorable coping and homeostatic mechanisms. That energy will be temporarily unavailable for external use and, as a result, you will feel fatigued.

Oftentimes, mineral levels, while they appear to be improved, will be associated with increased discomfort due to elimination of excessive toxic metals. For example, if cadmium (a toxic metal) is being eliminated, a temporary rise in sodium levels may occur in a slow oxidizer, causing the sodium level to appear more normal. However, the individual may experience the detrimental effects of cadmium elimination more than the beneficial effect of the more balanced sodium level.

Lifestyle and Progress on Retests

Lifestyle factors can enhance or impede the rate of progress of the nutritional correction program. Good eating habits, adequate sleep, moderate exercise, avoiding adverse types of stress, and dealing realistically with emotions such as fear and worry, will greatly improve your response to the program.

On the other hand, negative lifestyle factors can interfere with progress on the program to the extent that they can

counteract the benefits of the diet and supplements. This is often the case with people who show little improvement over several hair analysis tests.

Why Some People Don't Improve

There are three major reasons if minimal or no improvement has taken place:

- The program, including diet and supplements, wasn't followed faithfully or as specifically outlined.
- The nature of the condition is such that it is not amenable to biochemical correction.
- Other factors, such as lifestyle, have overridden and negated the effectiveness of the diet and supplements.

How Many Retests Are Necessary

Several other questions must be addressed to answer this question, which will clarify the question of how many retests are necessary:

- How long have you not been feeling well? The longer a problem has been present, generally the longer it will take to effect correction.
- How sick or well are you? We all hear of people who were never sick a day, who then develop cancer or experience a heart attack. These people were much sicker than they thought they were, and this is the case today with many people. The body is capable of compensating for a long time - similar to running a car on the reserve gas tank.
- What level of health do you desire? The 'standard' definition is that health is an absence of symptoms or diseases. However, it is possible to go beyond this concept, and have abundant energy and high resistance to any illness. This will take longer to achieve, naturally, than just getting rid of your symptoms.
- How many of your lifestyle habits are supporting the goals of the program, and how many are opposing it - or wearing you out? The more support there is for the program, the faster your progress.
- *The body proceeds at its own pace.* Perhaps this is the most important point. We can't set time limits because the kind of biochemical changes that must occur are complex, involving regeneration and repair of major organs and systems, and replacement of toxic elements with physiological elements in many enzyme systems. If this process were to occur too fast, the eliminative organs of the body would be overloaded and serious problems would arise. The body therefore regulates the correction process, and it is not unusual for several years to be required to rebuild bodily health. In fact, the slower you get well, the better, because getting well is a form of stress on the body, requiring biochemical energy. That stress is minimized when the process is slow and even. Your program is designed to derive the most rapid results without over stressing your body's coping mechanisms.

When to Retest

If you follow the diet and supplement program, another retest should be requested in approximately three months. In case of severe illness, or if you sense significant changes in your chemistry sooner, such as dramatic changes in food cravings, your doctor may wish to order a retest in 4 to 6 weeks. Retests are important because significant change occurs in the body chemistry within several months which may necessitate adjustments in your nutrition program. The objective is to keep supporting and balancing the body chemistry, and this can be accomplished most effectively by periodically assessing body chemistry through a retest.

FOODS CONTAINING SIMPLE CARBOHYDRATES WHICH SHOULD BE LIMITED

Alcohol
Applesauce
Apple butter
Cakes
Candy
Canned Foods w/Sugar
Chewing Gum
Chocolate
Cookies
Cool Whip
Corn Sweetener
Cough Lozenges
Cough Syrup
Cranberry Sauce
Deli Cole Slaw
Dextrose
Eggnog
Fruits
Fruit Juices
Glucose
Honey
Honey Roasted Peanuts
Ice Cream
Jams and Jellies
Jello
Ketchup
Maple Syrup
Meat Fillers
Milk
Molasses
Pastries
Peanut Butter (Commercial)
Pop Tarts
Potato Salad
Processed Meats
Relish
Salad Dressings
Sherbet
Soda Pop
Sorbitol
Soup (containing sugar)
Steak Sauce
Sucrose
Sugared Cereals
Sweet Pickles
Sweetened Yogurt

ADDITIONAL FOOD INFORMATION WHICH MAY BE HELPFUL

ACCEPTABLE COMPLEX CARBOHYDRATES

Barley
Buckwheat
Oats
Organic Blue or Yellow Corn (Including chips and corn tortillas)
Quinoa
Rice (Preferably organic brown rice)
Rye

COMPLEX CARBOHYDRATES TO BE AVOIDED

Corn Starch
Flour Tortillas
Grits
Most White Rice, Except Basmati Rice
White or Wheat Flour

ACCEPTABLE PROTEIN TYPE FOODS

Beans
Brewer's Yeast
Eggs
Fish
Natural Peanut Butter
Nuts and Seeds
Poultry
Protein Drinks [Low Sugar]
Red Meats
Wheat Germ

PROTEIN FOODS TO BE AVOIDED

Processed Cheese
Processed Meats
Raw Wheat Germ is usually rancid

FATS AND OILS TO BE AVOIDED

Commercial Peanut Butter
Cool-Whip
Margarine
Redi-Whip

ACCEPTABLE FATS AND OILS

Avocado
Butter
Cream
Meats

ACCEPTABLE FATS AND OILS - CONTINUED

Nuts and Seed Butters
Nuts and Seeds
Olive Oil
Sour Cream
Unrefined Vegetable Oil

CALCIUM/MAGNESIUM RATIO

NORMAL AND ABNORMAL RATIOS

The ideal Ca/Mg ratio in an unwashed sample of hair is about 6.67:1. Generally, a Ca/Mg ratio lower than 4.5 or greater than 8.5 is indicative of a sensitivity to sugars and simple carbohydrates. Between 10:1 and 12:1, or 3:1 and 3.3:1 are considered hypoglycemic ranges. Over 12:1 and less than 3:1 are considered a severe sugar and simple carbohydrate sensitivity range. Washing the hair at the laboratory can skew the Ca/Mg ratio and render it less reliable.

Ratios greater than 10:1 or less than 3:1 also indicate a tendency for calcium precipitation in the tissues. This can cause bone spurs, arthritic changes, arterial calcification and calcium stone formation in the kidneys or gall bladder. Magnesium is required to keep calcium in solution. When the ratio is imbalanced, it may reflect a relative magnesium deficiency.

Highly imbalanced ratios - above 12:1 and less than 3:1 - often indicate emotional difficulties.

BUT I DON'T EAT CARBOHYDRATES

An imbalanced Ca/Mg ratio usually indicates excessive carbohydrates in the diet. All foods contain carbohydrates. However, carbohydrate-rich foods are grains, pasta, bread, potatoes, beans, carrots, peas, corn, fruit, sweets and sugars such as fructose, dextrose, malt sweeteners, honey and maple syrup. At times, patients tell us they are not eating any of these foods, yet their Ca/Mg ratio is unbalanced. There are several explanations.

Many people are not aware or truthful about the amount of carbohydrates they consume. Carbohydrates may be hidden in many foods, especially prepared and packaged foods. Many, many items have added sugar, cornstarch, barley malt, flour, fructose and other starches or sugars. Also, remember the starchy vegetables - potatoes, carrots, beets, turnips, rutabaga, winter squash, corn, beans and peas. Although they are superior to eating sugar because they contain more fiber, vitamins and minerals, one can still overeat on them. Fruits, fruit juices, wine, beer, mixed drinks and soft drinks may be very high in carbohydrates.

If you have thoroughly ruled out excessive dietary carbohydrates, consider these other causes for an unbalanced Ca/Mg ratio.

STRESS

Stress of any kind can affect the Ca/Mg ratio. This is most likely due to its affect on the adrenal glands and glucose metabolism. Stress can increase blood sugar through the action of cortisol, leading to reduced sugar tolerance. Nutritional depletion from stress, and sustained excessive cortisol and insulin secretion can cause increased insulin resistance.

Cortisol release increases osteoblastic activity that may lead to a higher tissue calcium level as calcium is released from the bones. Excessive calcium channel activity due to stress can cause a catabolic state, with increased cell death and release of magnesium from the cells.

An imbalanced Ca/Mg ratio may also be secondary to an imbalanced Na/K ratio. The latter is a blood sugar ratio related less to diet and more to the effects of stress on energy production.

The Ca/Mg and Na/K ratios may correlate because of a direct relationship between calcium and sodium, both extracellular elements and between magnesium and potassium, both intracellular elements.

Also, sodium and magnesium tend to be antagonistic, as do calcium and potassium. That is, one rises when the other falls. Dr. Louis Kervan found that sodium-magnesium is a common transmutation, perhaps affected by adrenal gland activity. Dr. Paul Eck found the Ca/K and Na/Mg ratios better indicators of glandular activity than simply mineral levels.

When both Ca/Mg and Na/K ratios are low, it is referred to as a double inversion. It can reflect a more severe Na/K inversion, associated not only with carbohydrate intolerance, but also immune system weakness, protein catabolism, chronic emotional stress and adrenal exhaustion.

Similarly, if the Ca/Mg and the Na/K ratios are

elevated, the high Ca/Mg ratio may reflect a more severe high Na/K pattern, associated with acute stress, inflammation and related symptoms.

Emotional Stress

Emotional stress, even positive stress, can affect the Ca/Mg ratio. Perhaps it is because stress affects carbohydrate tolerance. Other factors may also contribute. For example, the *"calcium shell"* phenomenon is related to an excessively elevated calcium level. This has a numbing and protective effect in the face of stress. Usually the magnesium level also rises, but in some cases the Ca/Mg ratio may also be elevated.

Copper toxicity, often related to stress, also initially affects the calcium level. Once again, the Ca/Mg ratio is usually maintained, but may not be under some circumstances. Addressing emotional factors may be essential for balancing the Ca/Mg ratio.

Zinc, Taurine and Vitamin B_6

Deficiencies of zinc, taurine and vitamin B6 affect magnesium levels. These nutrients are synergistic with magnesium. High-carbohydrate diets deplete zinc and vitamin B6 and often lack taurine, which is found only in meats.

Deficiencies of these nutrients may cause a magnesium loss or biounavailability. Recall that a high level of any nutrient element on a hair analysis often indicates biounavailability, or loss of the element into the hair tissue.

Most diets are also low in magnesium. This is made worse by drinking a lot of milk, taking calcium supplements that do not contain magnesium, or eating refined-food diets. While calcium deficiency gets lots of press, magnesium deficiency also occurs commonly.

Toxic Metals and Contamination

Lead and other toxic metals in the body can skew a Ca/Mg ratio. Lead displaces calcium from the bones. Cadmium can also displace calcium. Toxic metals may or may not be revealed on the hair analysis, as they may be sequestered deep in body tissues. If not revealed on the test, they will often show up on future tests as body chemistry improves provided the patient follows a scientific program designed to balance body chemistry.

Handling Imbalanced Ca/Mg Ratios

Begin by reducing dietary carbohydrates, improving digestion and correcting the diet in accordance with the oxidation type. Supplementing with sufficient zinc, magnesium, vitamin B6 and taurine are helpful, along with supplements indicated by other hair analysis patterns.

Reducing stress may be very important. Severe stress can inhibit or even override any dietary or supplement program! Any time the Ca/Mg ratio is very imbalanced - greater than 15:1 or less than 2.5:1 - emotional stress is likely and important to address.

If a double inversion is present (low Ca/Mg and low Na/K), or adrenal exhaustion is suspected, the first priority for correction is the Na/K ratio. As this improves, often the Ca/Mg ratio will improve as well. The two ratios may alternate in their improvement over a period of months.

If toxic metals are affecting the ratio, the diet and supplement program can help mobilize these from storage, at which time the ratio will often improve.

For more information on this topic go to www.arltma.com - Articles

ADRENAL INSUFFICIENCY

WHAT IS ADRENAL INSUFFICIENCY?

Adrenal insufficiency refers to the inability of the adrenal glands to produce a normal quantity of hormones. It may also be defined as a reduced ability to cope with stress. It is one of the most common imbalances in our population today.

Adrenal insufficiency is not to be confused with Addison's disease. Addison's disease is more or less a total adrenal gland shutdown, or adrenal burnout. Adrenal burnout, low sodium/potassium ratio, is a more severe mineral imbalance which affects the energy-producing mechanisms of the body.

ABOUT THE ADRENAL GLANDS

The adrenal glands are often referred to as the stress glands or the fight-or-flight glands. The fight-or-flight response is mediated by the adrenal medulla. The fight-or-flight response is the way our bodies respond to stress.

The stress response is caused by the action of the adrenal hormones. Symptoms of adrenal insufficiency can be directly traced to a reduced secretion of these hormones when under stress. Adrenal hormones are divided into two groups, those produced in the adrenal medulla and those produced in the adrenal cortex.

Hormones produced in the medulla are epinephrine and norepinephrine. The hormones produced by the adrenal cortex are aldosterone, cortisol and cortisone. The cortical hormones have a slower, more prolonged action.

Aldosterone is called a mineralocorticoid hormone. Its primary function is to increase sodium retention by the kidneys. Aldosterone levels roughly correlate with *sodium* levels on a hair mineral analysis. Aldosterone is a pro-inflammatory hormone required to initiate a healing reaction.

Cortisol and cortisone are referred to as glucocorticoid hormones because they cause conversion of amino acids and glycogen to glucose. The corticosteroids are anti-inflammatory and provide a mild sense of euphoria. Cortisol levels roughly correspond to the *potassium* level on a hair mineral analysis.

A balance between aldosterone and cortisol, sodium and potassium, is necessary to maintain one's health. This balance is associated with the ratio of sodium to potassium on a hair analysis.

CAUSES OF ADRENAL INSUFFICIENCY

Genetics. Genetics can affect the adrenal glands. Also, genetic defects can be a cause of physical and emotional stress that can weaken the adrenal glands.

Congenital Weakness. Congenital means present at birth. However, it is not related to the genes. It is caused by nutritional deficiencies of the mother that are passed on to the child. It may also be caused by toxic metals or other toxins passed on from the mother's body that interfere with the functioning of the adrenal glands. This is a very common cause of adrenal insufficiency today.

Nutritional Imbalances. These can begin early in childhood with inadequate diets, diet inappropriate for one's oxidation type, poor food quality, or digestive problems that prevent proper nutrition. Even natural foods today often are low in vital minerals and do not provide adequate nutrition. Pesticides, heavy metals, bacteria, solvents and other organic chemicals can all act as stressors that weaken the adrenal glands.

Emotional or Psychological Stress. Responding to emotional stress over and over will eventually deplete the adrenal glands. A single overwhelming shock such as death of a loved one, can also deplete the adrenal glands. Emotional stress can begin in childhood, or at any time in life. It is actually the resistance or fear of a situation that causes the stress response.

Other possible stressors include pressures from family, school, work, social pressure, financial stress and others. People who force their bodies to "run or fight" all the time by any means will tend to exhaust their adrenal glands. The 'fight-or-flight' tendency must be balanced by adequate rest and sleep.

Stimulants. Most stimulants whip the adrenal glands. This may cause one to feel better for a while, but the long-term effect is to weaken the adrenal glands. Stimulants include sugar, alcohol, caffeine,

theobromine in chocolate, amphetamines and other medical drugs, cocaine, heroin and others.

Other types of stimulants can include loud noise, loud music, light stimulation, excessive exercise and excessive vibration. Anger, fear and worry can actually act as stimulants as well.

Note that stimulant use can be a result, as well as a cause of adrenal insufficiency. A person who is tired, due to weak adrenal glands, may be attracted to stimulants such as drugs, loud music, or anger to feel better temporarily.

Infections, Energetic and Structural Imbalances. These are all internal stressors that, if left uncorrected, can eventually weaken the adrenal glands by forcing the body to mount a chronic stress response to these irritants.

Toxic Substances. These may include chlorine in water, polluted air, mercury from dental fillings, household chemicals, food additives, pesticide exposure, dusts, molds and pollens. These often cause allergies that can be controlled with cortisone, the adrenal hormone.

Medical therapy, particularly cortisone or prednisone therapy, weakens the adrenal glands by creating hormone imbalances.

Mental Attitude. One's attitude makes a great difference in determining the stress response. Worry, fear, anger and resentment tend to increase the stress response. An attitude of gratitude, and compassion for oneself and others tends to diminish the stress response. Understanding the impermanence of the body and the world we live in, emotional detachment and detachment from all form, and a single-minded desire to extend love can greatly diminish the stress response.

Detection Of Adrenal Insufficiency

Hair Analysis

Hair mineral analysis is an excellent assessment tool for adrenal insufficiency when the test is properly performed. It is probably more reliable and sensitive than the blood or urine tests.

The hair must not be washed at the laboratory. This is because washing at the laboratory erratically removes sodium and potassium, critical minerals for adrenal assessment. According to the research of Dr. Paul Eck, the following are indicators of adrenal insufficiency on a hair analysis. The more of these indicators that are present, the greater the evidence of adrenal insufficiency. Also, the more extreme the values, the more suggestive of adrenal insufficiency problems.

- Sodium level less than 25 mg%
- Potassium level less than 10 mg%
- Sodium/potassium ratio less than 2.5:1
- Sodium/magnesium ratio less than 4.17:1
- Calcium/potassium ratio greater than 10:1

Correction Of Adrenal Insufficiency

- The only medical treatment for adrenal insufficiency is cortisone replacement therapy. Unfortunately, this therapy is accompanied by serious side effects. In our experience, the best approach involves:
- Nutritional assessment through tissue mineral analysis.
- A wholesome diet of natural foods appropriate for one's oxidation type and digestive ability.
- Nutritional supplements to reduce stress and enhance adrenal activity. The adrenal glands especially require vitamins A, C, E, pantothenic acid, manganese and zinc. Adrenal glandular substance is also recommended to provide adrenal nucleoprotein and other specific nutritional factors to help rebuild the adrenal glands.
- Supplements to enhance overall metabolism, eliminate toxic metals and enhance absorption and digestion of food.
- Lifestyle modification to reduce harmful stressors.

In mild cases of adrenal insufficiency, correction can be made in a matter of months. In more difficult or longstanding cases, complete correction may require several years. Persistence and patience are needed for optimal results.

For more information on this topic go to www.arltma.com - Articles

COPPER ELIMINATION

Many individuals who undertake nutritional balancing programs based on hair mineral analysis, at some point begin to eliminate excess tissue copper. This can cause symptoms such as headaches, skin rashes, anxiety, fatigue, testicular pain in men, changes in the menstrual cycle in women, irritability, weepiness or emotional sensitivity.

These symptoms are temporary, but can be annoying and cause some to discontinue the nutrition program when in fact it is working perfectly well. This fact sheet explores what to do when an individual is eliminating copper.

WHAT IS A COPPER ELIMINATION?

A copper elimination represents the elimination of excess copper from storage organs into the blood. Copper is stored in various tissues such as the liver, brain and bone to prevent it from building-up in excessive amounts in the blood.

WHY COPPER REACTIONS OCCUR

Most people have deficiencies of zinc, manganese and other minerals that contribute to excessive accumulation of copper in the body tissues. As one replenishes the zinc and other vital minerals, the body begins to eliminate excess copper.

Free or unbound copper, however, is quite toxic. Copper is a powerful oxidant, meaning it can inflame the tissues and cause oxidant damage. To avoid toxicity, it must be wrapped up or bound to a protein molecule. Sulfur amino acids found in eggs and meats are helpful for this. Adequate adrenal glandular activity is also required for the liver to produce enough copper binding proteins.

To eliminate copper, it is first mobilized from tissue storage sites and moved into the blood. The blood transports it to the liver and kidneys through which it is eliminated. Symptoms occur because high amounts of copper may be dumped into the blood at once and it is not cleared from the blood fast enough by the liver and kidneys. Also, there is often a deficiency of the copper binding proteins, ceruloplasmin and metallothionine, due to sluggish liver production of these proteins. Copper remaining in the blood, especially in an unbound form, may cause headaches and other symptoms.

SOLUTIONS

To stop the symptoms of copper elimination one may slow the mobilization of copper from tissue storage sites, assist the binding of copper and speed up the clearing of copper from the blood. The objective is to eliminate as much copper as possible as rapidly as possible without causing annoying symptoms.

To slow down the mobilization of copper from the tissues, the simplest way is to stop the nutritional supplement program for about three days. One may continue taking digestive enzymes but discontinue the rest. After three days, resume the program taking only one dose of supplements per day. If one remains symptom-free after five days, increase to two doses of supplements per day. If one remains symptom-free after five more days, increase to three doses per day. This will take care of many copper elimination symptoms.

To help clear copper from the blood, eat some eggs or animal protein regularly and get plenty of rest. Avoid constipation by taking extra magnesium and/or drink at least six eight-ounce glasses of water each day. If symptoms persist, the following supplements may be helpful.

Molybdenum
Russian black radish
L-Taurine
Methionine
N-acetyl cysteine

Slow walking, deep breathing, coffee enemas, sauna baths, massage therapy, acupressure, acupuncture, chiropractic treatment and far infrared saunas can also be helpful in alleviating copper elimination symptoms. (Far infrared saunas operate at temperatures of 100 degrees F to 130 degrees F vs

conventional saunas which operate at temperatures of 180 degrees F to 220 degrees F)

In addition, inasmuch as an increase in one's metabolic rate will cause a flare-up in symptoms associated with a copper elimination, slowing down the oxidation rate can temporarily alleviate copper elimination symptoms. This is accomplished by increasing one's calcium intake, increasing one's dairy product intake, such as, milk, cottage cheese, cream, yogurt, etc., together with an increase in dietary fat intake, such as, avocados, nuts, salad oils, cooking oils, dairy products, etc.) When the distressing symptoms come under control, it is time to resume the original nutritional program.

DIET FOR THE COPPER-TOXIC INDIVIDUAL

Copper-toxic individuals frequently have an aversion to eating protein, particularly *red meat* protein. It is important for such individuals to eat some protein at least twice a day, even if the quantity is small. Meat protein is rich in zinc content, a mineral essential to prevent copper toxicity and to promote the elimination of excess copper. Strict vegetarian diets are not advisable, but may be necessary for a period of time in severe cases, until adrenal activity has been adequately re-established.

THE BENEFITS OF COPPER ELIMINATION

If an individual is tempted to quit a nutrition program due to copper elimination symptoms, recall the benefits of getting rid of excess copper from the body. Copper toxicity is associated with a weakened immune system and the serious diseases that follow.

Copper toxicity is associated with mental and emotional symptoms including anxiety, depression, mood swings, panic disorder and crying. A copper imbalance is also associated with premenstrual tension, endometriosis, tumors, fatigue, many skin diseases, hair loss, greying of the hair, insomnia and liver diseases, such as hepatitis. Copper toxicity that is passed on to children is associated with attention deficit disorder, infections and impaired growth and development.

Copper symptoms are temporary and disappear as the copper level decreases and the organs of elimination function better. Staying on the nutrition program is worth the temporary discomfort in order to achieve and maintain excellent health.

For more information on this topic go to www.arltma.com - Articles

COPPER

The information on this sheet is of a general nature and is for educational purposes only. It is in no way intended to reflect the findings in this report.

SOURCES OF COPPER

Seafood - oysters, crabs, bluefish, perch, lobster
Meats - veal, duck, lamb, pork, beef liver and kidneys
Nuts/seeds - almonds, pecans, walnuts, filberts, brazil nuts, sesame, sunflower, pistachio
Vegetables - soybeans
Grains - wheat germ and bran
Miscellaneous - yeast, gelatin, bone meal, corn oil, margarine, mushrooms, chocolate
Other sources - copper water pipes, copper sulfate added to drinking water, copper compounds used in swimming pools, mineral supplements (especially prenatal vitamins), copper cookware and tea kettles, birth control pills, copper intrauterine devices, vegetarian diets, stress, exhaustion of the adrenal glands

Many children are born today with excessive copper levels passed to them from their mothers in utero.

ROLES IN THE BODY

- Energy production
- Female reproductive system
- Blood formation

FUNCTIONS OF COPPER

Circulatory - structure of blood vessels, aorta and heart muscle
Blood - formation of hemoglobin
Nervous - maintenance of the myelin sheath on nerves
Reproductive - essential for fertility, menstrual cycle
Endocrine - synthesis of stimulatory neurotransmitters
Muscular/skeletal - bone and connective tissue structure
Immune system - necessary for the immune system
Integumentary - needed for skin, hair, nails and pigments
Energy - energy production (the electron transport system)

SYMPTOMS ASSOCIATED WITH A COPPER DEFICIENCY

anemia
atherosclerosis
demyelination of nerves
diarrhea
edema
fatigue
hair loss
impaired collagen formation
loss of hair color
low hormone production
osteoporosis

Symptoms Associated With A Copper Excess

acne
adrenal insufficiency
allergies
alopecia
anemia
anorexia
anxiety
arthritis
autism
cholesterol, elevated
cancer
cystic fibrosis
depression, mental
diabetes
estrogen (imbalance)
fatigue
fears
fractures, bone
headaches (migraine)
hemorrhages
heart disease
hyperactivity
hypertension
hyperthyroidism
hypochlorhydria
hypoglycemia
infections
inflammation
insomnia
mind racing
mood swings
multiple sclerosis
myocardial infarction
nausea
pancreatic dysfunction
premenstrual tension
schizophrenia
sexual inadequacy
spaciness
strokes
tooth decay
urinary tract infections
vitamin deficiencies

Synergetic Nutrients

Absorption - proteins

Antagonistic Nutrients

Absorption - zinc, manganese, iron, calcium, molybdenum, sulfur, mercury, cadmium, vitamin C
Metabolic - zinc, vitamin C, vitamin B_6, sulfur, molybdenum, manganese, iron

Hair Analysis Notes

- Bio-unavailable copper: Often copper status can be tricky to assess. Copper may be present, but unavailable for use in the body. This occurs any time adrenal gland activity is low.
- Copper and Oxidation Type: Fast oxidizers generally are deficient in copper, while slow oxidizers usually have either high copper or bio-unavailable copper.
- Hidden Copper Toxicity: Copper is often normal on hair tests, but may actually be locked in body tissues. Test indicators of a hidden copper imbalance are:
  - calcium level greater than 75 mg%
  - potassium level less than 3 mg%
  - sodium/potassium ratio less than 2.2:1
  - mercury toxicity often indicates a hidden copper toxicity
  - copper level less than 1.0 mg%
  - zinc/copper ratio less than 4.50:1

Reasons For Supplementation With Copper

- to raise a low sodium/potassium ratio
- to enhance retention of calcium in tissues